

APPENDIX K: WATER RESOURCES AND FISHERIES**Table of Contents**

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Introduction

One of the original purposes for establishing the National Forest System was to protect our nation's water resources. The 2012 planning rule includes a newly created set of requirements associated with maintaining and restoring watersheds and aquatic ecosystems, water resources, fisheries resources, and riparian areas in the plan area. The increased focus on watersheds and water resources in the 2012 planning rule reflects the importance of this natural resource, and the commitment to stewardship of the Nation's waters.

The 2012 planning rule requires that plans identify watersheds that are a priority for restoration and maintenance. The 2012 planning rule also requires all plans to include components to maintain or restore the structure, function, composition, and connectivity of aquatic ecosystems and watersheds in the plan area, taking into account potential stressors, including climate change, and how they might affect ecosystem and watershed health and resilience. Plans are required to include components to maintain or restore water quality and water resources, including public water supplies, groundwater, lakes, streams, wetlands, and other bodies of water. The planning rule requires that the FS establish best management practices for water quality and that plans ensure implementation of those practices.

Plans are also required to include direction to maintain and restore the ecological integrity of riparian areas. The Nez Perce-Clearwater proposes to maintain riparian areas through riparian management zones, and related components. This direction will also protect native fish and further strengthen the watershed conservation network.

The following information was utilized for the analysis included in the Water Resources and Fisheries Resource sections of the Draft Environmental Impact Statement for the Revised Land Management Plan for the Nez Perce-Clearwater National Forests.

Watershed Classification

A watershed is a "region or land area drained by a single stream, river, or drainage network; a drainage basin" (36 CFR 219.19). These drainage areas are defined by the highest elevations surrounding a selected location on a stream so that a drop of water falling inside the boundary will drain to the stream while a drop of rain falling outside of the boundary will drain to another watershed. Watersheds encompass all of the ecosystem elements, including water, soils, vegetation, and animals. Watershed boundaries cross ownership boundaries since they are based on topography. Other land owners in analyzed subwatersheds include state lands, private industry, and other private entities.

Watersheds also span the landscape at many different scales. A systematic method, developed by the United States Geological Survey, delineates watershed boundaries and assigns them hydrologic unit codes (HUC). The hydrologic unit code system is used to divide and subdivide the watersheds into successively smaller, nested levels. As they are successively subdivided, the numbering scheme of the units increases by two digits per level. For example, Mill Creek subwatershed is a sixth level waterbody with the HUC12 number 170603050701. Table 1 displays the nested, hierarchical classification for the Mill Creek subwatershed.

Table 1. Hierarchy for the six nested levels of hydrologic units for the HUC12 Mill Creek subwatershed (170603050701).

Level	Hydrologic Unit Hierarchy	Hydrologic Unit Code Designation	Waterbody Name	Hydrologic Unit Code Number
1	Region (2 digit)	HUC02	Pacific Northwest Region	17
2	Subregion (4 digit)	HUC04	Lower Snake	1706
3	Basin (6 digit)	HUC06	Clearwater	170603
4	Subbasin (8 digit)	HUC08	South Fork Clearwater	17060305
5	Watershed (10 digit)	HUC10	Middle South Fork Clearwater River	1706030507
6	Subwatershed (12 digit)	HUC12	Mill Creek	170603050701

Watershed Condition Framework and Priority Watersheds

Watershed Condition

The USFS National Fish and Aquatic strategy recognizes that restoring watershed health and function is critical to sustaining clean, reliable water supplies for fish and wildlife habitat and to meeting human demands (USDA 2017). Goal 1 of the six goals of the strategy is to conserve fish and aquatic resources. Sustaining the health and diversity of fish, other aquatic species, and their habitats is inherent to this goal. The strategy declares that the USFS will protect, conserve, and restore watersheds and aquatic ecosystems upon which populations of fish and other aquatic species depend. It further states that the USFS will implement plans to help aquatic species and ecosystems respond to stressors, including drought, floods, invasive species, and disease. The agency's vision is for healthy watersheds and aquatic ecosystems characterized by complex, interconnected, and diverse habitats that contain self-sustaining assemblages of fish and other aquatic species.

Watershed Condition Framework (USDA 2011) is one of the tools used to meet this strategy. It is a consistent, nationwide approach to watershed restoration, which is conducted holistically at the subwatershed (HUC12) scale.

Watershed condition was evaluated for each the subwatersheds, typically 10,000 to 40,000 acres, across the Nez Perce-Clearwater utilizing Watershed Condition Framework (USDA 2011), a methodology that characterizes watershed condition based on characteristics and attributes related to watershed processes. Subwatersheds were ranked in one of three discrete classes that reflect the level of watershed health or integrity (Potyondy and Geier 2011). Watershed health and integrity are considered conceptually the same (Regier 1993). Watersheds with high integrity are in an unimpaired condition in which ecosystems show little or no influence from human actions (Lackey 2001).

Within this context, the three watershed condition classes are directly related to the degree or level of watershed functionality or integrity:

- Class 1 - functioning properly
- Class 2 - functioning-at-risk
- Class 3 - impaired

The Watershed Condition Framework (USDA, 2011) characterizes a watershed in good condition as one that is functioning in a manner similar to natural wildland conditions. This characterization should not be interpreted to mean that managed watersheds cannot be in good condition. A watershed is considered to be functioning properly if the physical attributes are adequate to maintain or improve biological integrity. This consideration implies that a class 1 watershed that is functioning properly has minimal undesirable human impact on its natural, physical, or biological processes, and it is resilient and able to recover to the desired condition when disturbed by large natural disturbances or land management activities (Yount & Niemi 1990). By contrast, a class 3 watershed has impaired function because some physical, hydrological, or biological threshold has been exceeded. Substantial changes to the factors that caused the degraded state are commonly needed to set them on a trend or trajectory of improving conditions that sustain physical, hydrological, and biological integrity.

Watershed conditions vary across the Nez Perce-Clearwater with conditions ranging from those unaffected by direct human disturbance to those exhibiting various degrees of modification and impairment. In 2011, the Nez Perce-Clearwater completed the watershed condition classification for 220 HUC12 subwatersheds. In summary, 140 watersheds were rated as functioning properly, 73 were rated as functioning at risk, and 7 were rated as impaired. As shown in Figure 1, the majority of subwatersheds with Class 2 and 3 ratings are concentrated in the western, more road intensive portion of the Forest. The most significant driver of the ratings was roads and trails.

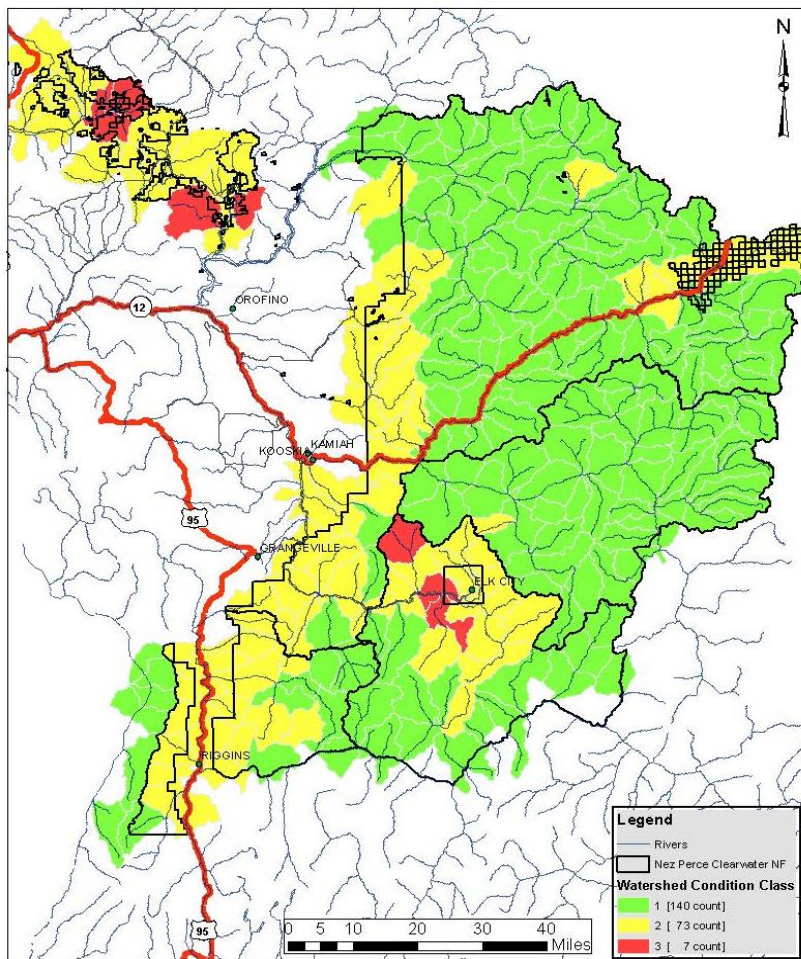


Figure 1. Watershed Condition Classification on the Nez Perce-Clearwater National Forest (2011).

Class 1 watersheds are primarily in Wilderness or unroaded areas of the Forests. Class 2 watersheds are mostly in areas with active vegetation management and higher road density. Class 3 watersheds are also in areas with active vegetation management and high road density, but these watersheds also have legacy features that have degraded watershed conditions, for example dredge mining in Crooked River.

Trends in Class 1 watersheds are relatively static. The primary drivers of change in these areas are wildfires, landslides, and insect/disease infestations. Changing climate may have contributed to and possibly exacerbated the magnitude and extent of effects from these drivers. Forest management direction over the past 10 years has been to allow natural processes to dictate variations in watershed conditions in these areas. Several Class 1 watersheds have the potential to degrade into Class 2 with only moderate climatic changes, due to the influence of multiple stressors.

In Class 2 and Class 3 watersheds, the trends are mixed: while some watersheds are declining, most watersheds are showing slow, continual improvement as restoration activities are implemented or natural recovery occurs. In road-accessible areas, projects have been designed to incorporate a soil and water improvement component to minimize the potential for soil erosion and mass wasting to aid in restoring water flow patterns and re-establishment of native plant species. The main efforts have included the following: restoration of vegetation to natural species, age, and opening patterns; restoration of soil productivity; and reduction of impacts of forest roads by road reconstruction, maintenance, and decommissioning. In these areas, timber harvest, wildfire, mining, livestock grazing, recreation activities, road location, and management have combined with natural disturbances to either accentuate or lessen the intensity or duration of watershed processes. Changing climate may have either exacerbated or contributed to the magnitude and extent of the effects of these drivers.

Table 2 displays the number of subwatersheds on Nez Perce-Clearwater lands by class located within each of the subbasins. Subwatersheds with Class 3 ratings are located in Lower North Fork Clearwater, South Fork Clearwater, and Palouse/Rock subbasins. The seven subwatersheds with class 3 ratings all have legacy mining effects, compromised channel function, high road densities, and impaired waters.

Table 2. Watershed Condition Class by Subbasins with Nez Perce-Clearwater.

Subbasin	Percent FS Lands	Number of HUC12s	Class 1 – Functioning Properly	Class 2 – Functioning at Risk	Class 3 – Impaired Function
Hangman	2	1		1	
Palouse/Rock	7	6		4	2
Lower North Fork Clearwater	12	9	3	4	2
Upper North Fork Clearwater	95	38	34	4	
Clearwater	9	10		10	
Middle Fork Clearwater	53	4	1	3	
South Fork Clearwater	70	27	6	18	3
Lochsa	100	38	29	9	
Upper Selway	38	14	14		
Lower Selway	100	29	28	1	
Lower Salmon	30	17	3	14	
Lower Little Salmon	11	4	1	3	
Middle Salmon-Chamberlain	38	17	15	2	

Table 3 displays the subwatersheds by class for each of the 12 indicators. The subcategory under each of the indicators is also included. Water quality, water quantity, and aquatic habitat account for 30 percent of the weighting for the overall watershed condition class score, aquatic biota and riparian/wetland vegetation add 30 percent, roads/trails and soils add 30 percent, while fire regime, forest cover, rangeland vegetation, terrestrial invasive species, and forest health account for only 10 percent of the weighting for the overall score.

Table 3. Watershed Condition Class by Indicator

Indicator	Class 1 – Functioning Properly	Class 2 – Functioning at Risk	Class 3 – Impaired Function	Percent of HUC12s in Class 2 and 3
Water quality - impaired waters, 303(d) listed or other water quality problems	158	26	36	28
Water quantity - flow characteristics	184	30	6	16
Aquatic habitat - habitat fragmentation, large woody debris, channel shape and function	151	48	21	31
Aquatic biota - life form presence, native species, exotic and/or aquatic invasive species	188	18	14	15
Riparian and wetland vegetation	124	56	40	44

Roads and trails - open road density, road and trail maintenance, proximity to water, mass wasting	82	53	85	63
Soils - soil productivity, soil erosion, soil contamination	122	74	24	45
Fire regime - fire regime condition class	67	146	7	70
Forest cover - loss of forest cover	220	0	0	0
Rangeland vegetation condition ¹	114	31	37	37
Terrestrial invasive species - extent and rate of spread	81	92	47	63
Forest health - insects and disease	145	75	0	34

¹For the Rangeland Vegetation indicator, 38 HUC12s did not include rangeland vegetation and therefore were not assessed for that indicator.

The watershed condition framework improves watershed restoration planning and implementation efforts on National Forests by targeting the implementation of integrated suites of activities in watersheds that have been identified as priorities for restoration. The watershed condition framework (USDA FS 2011) is a 6-step system to reestablish the structure and function of an ecosystem and are as follows:

- Step A: Classify the condition of all HUC12 subwatersheds on the Forests
- Step B: Prioritize watersheds for restoration
- Step C: Develop a Watershed Restoration Action Plan
- Step D: Implement the plan
- Step E: Track accomplishments
- Step F: Monitor improvement

Utilizing the watershed condition framework process in 2011, the Nez Perce-Clearwater designated four subwatersheds as priority watersheds: Upper Little Slate Creek, Upper Elk Creek, Upper Clear Creek, and Fishing Creek. For each of these four subwatersheds, a watershed restoration action plan (WRAP) was developed to designate the essential projects necessary to restore the watershed to a better condition. Issues in these watersheds include exclusion of wildfire, road densities, past mining impacts, riparian structure and function, invasive species, loss of soil productivity, and water quality. Projects identified in the watershed restoration action plans would help to minimize the potential for soil erosion and sediment delivery, aid in restoring water flow patterns and re-establishment of native plant species.

In 2014, Upper Newsome Creek and Meadow Creek subwatersheds were added to the list of designated priority watersheds. To date, all restoration work has been completed in Fishing Creek, Upper Newsome Creek, and Meadow Creek subwatersheds. The majority of the restoration work was accomplished through partnership with the Nez Perce Tribe. Work in Upper Elk Creek, Upper Clear Creek, and Upper Little Slate subwatersheds are ongoing. Although not a priority watershed, Lower Crooked River subwatershed was one of the subwatersheds with a class 3 rating. An extensive restoration project is ongoing to remove historic mine tailings, re-meander the river, and restore channel function.

Priority Watersheds

The 2012 planning rule requires that forest plans identify watersheds that are a priority for restoration and maintenance. Priority areas for potential restoration activities could change quickly because of events such as wildfire or the introduction of invasive species. Therefore, the 2012 planning rule includes priority watersheds as plan content, so that an administrative change could be used to quickly respond to changes in priority.

Watersheds that are a priority for maintenance or restoration include: Upper Elk Creek (HUC12 #170603080701), Upper Clear Creek (HUC12 #170603040102), and Upper Little Slate Creek (HUC12 #170602090301). Future priority watersheds will be determined throughout the life of this plan.

The Upper Elk Creek priority watershed is a 26,980 acre drainage area, occurs within 88 percent of NFS lands, and drains into the Lower North Fork Clearwater River above Dworshak Dam. The watershed was rated as Class 2 – functioning at risk during the 2011 watershed condition classification process. It has a completed watershed restoration action plan and projects are currently ongoing. The primary reasons for selecting Upper Elk Creek were to take actions to protect water quality for the Elk Creek Municipal Watershed, to restore watershed conditions impaired by past management activities, and to abate the

wildfire risks associated with widespread insect and disease infestations. The project includes road and trail decommissioning, road reconstruction and other improvements, roads placed in intermittent storage, in channel structure repair, stream habitat restoration, dispersed site decommissioning, fuels reduction treatments, forest vegetation improvement, invasive species treatment and soil restoration.

The Upper Clear Creek priority watershed is a 19,050 acre drainage area and occurs within 97 percent of NFS lands. It is located within the Middle Fork Clearwater River Subbasin and within the Forest's CFLRP project area. The watershed was rated as Class 2 – functioning at risk during the 2011 watershed condition classification process. It has a completed watershed restoration action plan and a few of projects have been implemented. The exclusion of wildfire, a naturally occurring ecological process, has resulted in a vegetative condition that did not historically exist. Insect and disease activity in forested areas is increasing. Roads have increased sediment delivery to streams reducing habitat quality for ESA listed and sensitive fish species. The project includes road decommissioning, road reconstruction and other improvements, such as addition of cross drains; culvert replacements, fuels treatments, forest vegetation improvement, invasive species treatment and soil restoration.

The Upper Little Slate Creek priority watershed is a 25,528 acre drainage area, occurs within 100 percent of NFS lands, and is located in the Lower Salmon River Subbasin. The watershed was rated as Class 2 – functioning at risk during the 2011 watershed condition classification process. It has a completed watershed restoration action plan and projects are currently ongoing. The watershed contains designated critical habitat for ESA listed bull trout and spring/summer Chinook salmon and has one of the few remaining populations of whitebark pine. The project includes road and trail decommissioning; road and trail improvements; culvert replacements; stream channel reconstruction meanders; riparian planting; soil restoration; gully stabilization; vegetation treatments in bark beetle infested stands, followed by planting of ponderosa pine and western larch; thinning and burning of vegetation competing with whitebark pine, followed by planting of whitebark pine seedlings; and rehabilitation of abandoned mines.

Water Quality

The goal of the Clean Water Act is “to restore and maintain the chemical, physical, and biological integrity of the nation’s water”. The Idaho Department of Environmental Quality is responsible for ensuring that Idaho’s surface, ground, and drinking water resources meet State water quality standards.

The Idaho Department of Environmental Quality uses water quality standards (IDAPA 58.01.02) to determine if Idaho’s waters are being adequately protected. A water quality standard defines the goals that have been set for a water body by designating the uses for the water, sets criteria necessary to protect those uses, and prevents degradation of water quality.

Beneficial Uses

Beneficial uses are the desired uses that water bodies should support. Each beneficial use has a unique set of water quality requirements or criteria that must be met for the use to be supported. Most water bodies have multiple beneficial uses. A water body is considered impaired when it does not meet the water quality criteria needed to support one or more of its beneficial uses.

A *designated use* is a beneficial use assigned to a specific water body in Idaho water quality rules. The designated use of a waterbody does not imply any rights to access or ability to conduct any activity related to the use designation, nor does it imply that an activity is safe. For example, a designation of

primary or secondary contact recreation may occur in areas where it is unsafe to enter the water due to water flows, depth or other hazardous conditions.

In some cases, a water body does not have uses designated. For undesignated surface waters, Idaho applies a *presumed use protection*, meaning the water body will be protected for cold water aquatic life and primary or secondary contact recreation.

The following are types of uses that pertain to water bodies on the Nez Perce-Clearwater:

- Cold water aquatic life: water quality appropriate for protecting and maintaining a viable aquatic life community for coldwater species; some water bodies include a bull trout subcategory with stricter stream temperature criteria
- Salmonid spawning: waters that provide or could provide a habitat for active self-propagating populations of salmonid fishes
- Primary contact recreation: protects people from gastrointestinal illness due to incidental ingestion of the water they are recreating in or on and applies to waters where people engage in activities that involve immersion in, and likely ingestion of, water, such as swimming, waterskiing, and skin diving.
- Secondary contact recreation: protects people from gastrointestinal illness due to incidental ingestion of the water they are recreating in or on and applies to waters where people engage in activities where ingestion of water may occasionally occur, such as fishing, boating, wading, and infrequent swimming.
- Domestic water supply: water quality appropriate for drinking water supplies, although it does not necessarily mean the water should be consumed without treatment
- Agricultural, industrial, wildlife habitats, and aesthetics uses apply to all surface waters of the state.

IDEQ 303(d)/305(b) Integrated Report

The IDEQ 303(d)/305(b) Integrated Report is a compilation of information about the water quality status of all Idaho waters and is a requirement of the Clean Water Act. Integrated reports are compiled biennially and are submitted to the US Environmental Protection Agency for approval. There are two main parts to the integrated report: 1) the 305(b) list, which summarizes the current condition of all state waters; and 2) the 303(d) list, which identifies those waters that are impaired or water quality limited and needing a total maximum daily load.

Both lists are named in accordance with the sections of the CWA where they are defined. Impaired waters listed on the 303(d) list are simply a subset of those on the 305(b) list. The Integrated Report places all state water bodies into at least one of five primary categories, which are shown in

Table 4. These categories describe how a water body relates to its beneficial uses.

Table 4. Integrated Report categories and miles occurring of each occurring on the Nez Perce-Clearwater (IDEQ 2019).

Category	Description	Assessed Miles
1	Waters are wholly within a designated wilderness or Idaho roadless area and presumed to be fully supporting all beneficial uses.	1,691
2	Waters are fully supporting those beneficial uses that have been assessed	2,839
3	Waters have insufficient or no data and information to determine if Beneficial uses are being attained or not	1,698
4A	Waters do not support one or more beneficial uses, but a TMDL is completed and approved by EPA	1,309
4C	Waters do not support one or more beneficial uses. Waters are those failing to meet applicable water quality standards Due to other types of pollution, such as habitat or flow alteration, not a pollutant., and thus a TMDL is not required	333
5	Waters of the state that are listed as impaired on the 303(d) list and for which a TMDL is required	150

The most current US Environmental Protection Agency approved report is the 2016 Idaho Department of Environmental Quality 303(d)/305(b) Integrated Report (IDEQ 2019). All lakes on the Nez Perce-Clearwater that the Idaho Department of Environmental Quality has assessed are fully supporting beneficial uses and none are listed as impaired (IDEQ 2019). The Idaho Department of Environmental Quality has identified about 8,000 miles of stream on the Nez Perce-Clearwater, of which 21 percent have yet to be assessed for water quality (Table 5). Approximately 4,527 miles of stream are determined to be fully supporting beneficial uses, while 1,786 miles of stream segments on the Nez Perce-Clearwater are not supporting beneficial uses (IDEQ 2019).

Table 5. Beneficial use categories and miles of each occurring on the Nez Perce-Clearwater (IDEQ, 2019).

2014 Integrated Report 305(b) Category	Stream miles	Percent of total stream miles
Fully Supporting	4,527	57
Not Assessed	1,693	21
Not Supporting	1,786	22

Streams not supporting beneficial uses do not meet applicable water quality standards for their designated beneficial uses and are termed impaired or water quality limited. They are assigned Category 4 or 5 designations. Table 6 displays the miles of stream on the Nez Perce-Clearwater that are designated as category 4 or 5 and the pollutants or pollution for which the water body is impaired.

Table 6. 2014 Integrated Report category 4 and 5 stream miles and related pollutant or pollutions by subbasin occurring on the Nez Perce-Clearwater (IDEQ 2019).

Subbasin	Total Miles Assessed	Category 4A (miles)	Category 4C (miles)	Category 5 (miles)	Pollutants or Pollutions
Hangman	14	14	0	0	sediment, temperature, bacteria
Palouse	190	4	52	0	sediment, temperature, bacteria, flow regime alterations, physical substrate habitat alterations
Rock	4	0	0	0	none
Middle Salmon-Chamberlain	846	53	0	0	temperature
Lower Salmon	467	3	0	0	bacteria
Little Salmon	83	0	0	0	none
Upper Selway	451	0	0	0	none
Lower Selway	1297	0	0	0	none
Lochsa	1378	0	0	137	temperature
Middle Fork Clearwater	167	0	0	0	none
South Fork Clearwater	1170	922	176	0	temperature, sediment, physical substrate habitat alterations
Clearwater	334	99	81	3	temperature, flow regime alterations, physical substrate habitat alterations
Upper North Fork Clearwater	1422	191	5	5	temperature, sediment, physical substrate habitat alterations
Lower North Fork Clearwater	186	23	19	0	temperature, sediment, bacteria, flow regime alterations, physical substrate habitat alterations

Impairments

Sediment and temperature are the primary pollutants of concern for water bodies on the Nez Perce-Clearwater. Only a few streams are listed for bacteria, identified as *Escherichia coli*, a common fecal and intestinal organism of the coliform group of bacteria found in warm-blooded animals. Approximately 330 miles of stream are designated category 4C for flow regime alterations and physical substrate habitat alterations. Flow and habitat alterations are considered pollution and not specific pollutants according to the US Environmental Protection Agency (Clean Water Act 502(6) and 502(19)), hence, the Idaho Department of Environmental Quality does not develop total maximum daily loads for flow alteration or habitat alteration. Pollution encompasses human-caused changes in the environment that

alter the functioning of natural processes and produce undesirable environmental or health effects. Pollution includes human-induced alteration of the physical, biological, and chemical integrity of water. For example, excess sediment may impair a beneficial use and, therefore, violate state water quality standards on a water body that may be affected by a lack of flow, altered water flow or altered habitat. If the impairment is partly caused by excess sediment, the water body will also be placed in category 5 and placed on the 303(d) list of impaired waters in the Integrated Report.

Water temperature is the most common parameter not meeting water quality standards. Temperature is a physical property of water that has a profound effect on organisms that live or reproduce in the water, particularly Idaho's native coldwater fish such as salmon, bull trout, and steelhead and some amphibians. When water temperature becomes too high, salmon and trout suffer a variety of ill effects, ranging from decreased spawning success, to increased susceptibility to disease and toxins, to death. Water temperature also reduces the solubility of oxygen on which aquatic life depends and increases the toxicity of ammonia. Water temperature may enhance sensitivity to other toxic substances as well. Idaho's temperature criteria are numeric.

Water temperature is most often associated to the amount of solar radiation reaching a water body. The amount of shade or openings in riparian ecosystems influences the amount of solar radiation reaching the stream. The width of riparian ecosystems and associated vegetative cover correlates well with degree of shade (Beschta et al, 1987). However, stream temperatures are controlled by a complex set of site-specific variables; including shading from riparian vegetation, wind velocity, relative humidity, geomorphic factors, groundwater inflow, and hyporheic flow (Caissie 2006). Increasing air temperatures resulting from climate change appear to be increasing stream temperatures within Idaho (Rieman and Isaak 2010).

In riverine systems, a dynamic balance exists between the supply of sediment from natural erosion and the energy of the moving water that carries and redistributes the sediment load. This balance varies from place to place within the stream channel. Sediment balance determines the very character of many streams and their suitability for various forms of aquatic life.

Indicators of an altered sediment regime include unbalanced aggradation or degradation, stream bank cutting, and channel bed scour. Idaho's criterion for sediment is narrative. Sediment comes in many sizes, can be measured in many ways, and many complexities exist in determining how much sediment is too much (Rowe et al, 2003).

Total Maximum Daily Load

As directed by the Clean Water Act, each State agency must develop a total maximum daily load for all waters identified on the section 303(d) list of impaired waters. Total maximum daily loads provide an approach to improving water quality so that streams and lakes can support and maintain their State-designated beneficial uses. A total maximum daily load determines pollutant reduction targets and usually covers a basin or subbasin. In instances where total maximum daily load assessment includes NFS lands, the Forest Service is listed as a designated management agency and is relied upon for creating water quality management plans that identify strategies and actions to attain water quality standards. The State of Idaho is the lead agency for total maximum daily load development and approval.

The total maximum daily load process has three distinct steps: 1) subbasin assessment, 2) loading analysis, and 3) implementation plan development. A loading analysis is needed only for those water bodies and their watersheds that were documented in the subbasin assessment to be water quality

limited and only for those pollutants causing impairment. In addition to a loading capacity and allocations, a loading analysis sets out a general pollution control strategy and an expected time line for meeting water quality standards. For each of the subbasins with a developed total maximum daily load, the IDEQ works with agencies and local landowners to develop a total maximum daily load implementation plan. As shown in Table 7, only four subbasins have completed all steps of the process.

Table 7. Status of subbasins in the total maximum daily load process.

Status	Subbasins
Completed subbasin assessment, but no TMDL established	Lochsa River
Completed subbasin assessment and TMDL established	Lower Selway, Middle Salmon River–Chamberlain Creek, Lower Salmon River, Potlatch River, South Fork Palouse River, Palouse River tributaries, Lolo Creek Tributaries, Upper Hangman Creek, Upper North Fork Clearwater River
Completed subbasin assessment and TMDL established; TMDL implementation plan completed	Potlatch River, Little Salmon River, South Fork Clearwater River, Lower North Fork Clearwater

Once an approved total maximum daily load is established, waterbodies are moved from Category 5 to Category 4A in the integrated report. Impaired waters without a completed TMDL remain as a Category 5 water body on the 303(d) list.

As shown in Table 7, the Lochsa River subbasin does not have a total maximum daily load established. The Lochsa Subbasin Assessment (IDEQ 1999) identified water temperature concerns, but recommended that the Lochsa River be removed from the 303(d) list because temperature exceedances were natural and that the river and its tributaries supported their beneficial uses. Further analysis of the streams did determine that for some of the streams the temperature exceedances were natural and those segments were delisted. For other streams it was determined that roads and openings near streams due to timber harvest had reduced shading. In October 2012, the Lochsa River Subbasin Temperature Total Maximum Daily Loads: Addendum to the Lochsa River Subbasin Assessment was published (IDEQ 2012). This report has not yet been approved by the US Environmental Protection Agency and no total maximum daily load implementation plan has been established. The Lochsa River and several tributaries in the lower portion of the subbasin are still listed as impaired for water temperature in the 2016 303(d)/305(b) Integrated report (IDEQ 2019).

Anti-degradation

The State of Idaho anti-degradation policy requires that existing beneficial uses be maintained and protected on all water bodies. Under the anti-degradation standard, Idaho has a three-tier policy with varying levels of protection: 1) unremarkable waters; 2) high quality waters; and 3) outstanding resource waters. All waters receive Tier I protection. Water bodies identified in the Integrated Report as fully supporting assessed uses will be provided Tier II protection. Waters given Tier III protection are outstanding resource waters. The Idaho State legislature has yet to designate any river in Idaho as an outstanding resource waters.

Public Drinking Water

Water draining off NFS lands is often used for drinking water supplies. The protection of all sources of public drinking water from contamination is a nationwide imperative, heralded by the Safe Drinking Water Act of 1974.

The Forests to Faucets project is a national program that maps areas across the United States that are most important to surface drinking water sources. The project also identifies forested areas important to the protection of drinking water and areas where the quantity and quality of drinking water supplies might be threatened by development, insects and diseases, and wildland fire (Weidner and Todd 2011). Watershed on the Nez Perce-Clearwater have moderate importance for delivery of drinking water from surface waters originating on the Forests. Weidner and Todd (2011) also indicated that lands within the Forest have minimal threats from development, moderate to high threats from insects and disease, and moderate to high threats from wildfire.

Municipal Supply Watersheds and Source Water Protection Areas are two separate constructs for drinking water protection that are applicable to NFS land management.

Municipal Supply Watersheds

Direction for management of National Forest System watersheds that supply municipal water is provided in 36 CFR 251.9 and Forest Service Manual 2542. The Forest Service is directed to manage watershed lands for multiple uses while recognizing domestic supply needs. Municipalities may apply to the Forest Service if they desire protective actions or restrictive measures not specified in the Forest Plan. Formal written agreements to ensure protection of water supplies may be appropriate when multiple use management fails to meet the needs of a water user. The Forest recognizes the following municipal watersheds: City of Elk River; Clearwater Water Association, Wall Creek; and Elk City Water District, American River. The Clearwater Water Association and Elk City Water District have a municipal watershed protection plan developed with the Forest.

City of Elk River

In 2003, the city of Elk River, Idaho, began diverting water from Elk Creek 0.25 miles downstream from the Forests boundary. Groundwater wells were the previous source of water. The water is treated by a slow sand filter and disinfection and delivered to approximately 100 connections. The Nez Perce-Clearwater manages 79 percent of the watershed above the intake. The Nez Perce-Clearwater maintained stream gage located 700 feet upstream of the City's water supply intake has discharge and suspended sediment records. The Source Water Assessment (PWS #2180013) was completed by the Idaho Department of Environmental Quality in 2005 (IDEQ 2005).

Clearwater Water District

The town of Clearwater diverts water via a concrete dam in Wall Creek on the Nez Perce National Forest into a holding tank with a special use permit for the intake. The water is treated with a direct-pressure mixed-media filter and chlorine. This water is provided to 96 households. The Forest Service manages 100 percent of the watershed above the intake. The Source Water Assessment (PWS#2250011) completed by the Idaho Department of Environmental Quality listed two potential contaminant sites, both related to mine prospects (IDEQ 2001).

Elk City Water District

The town of Elk City diverts water from Big Elk Creek downstream from the Forests boundary. About 100 connections are provided by the Elk City Water District. The Forest Service manages the majority of the

watershed above the intake. The Source Water Assessment (PWS#2250017) completed by the Idaho Department of Environmental Quality listed several potential contaminant sources related to mine prospects and a comprehensive environmental response, compensation, and liability act site (IDEQ 2002).

Source Water Protection Areas

Source water protection areas protect public water systems from contamination in accordance with the 1996 amendments to the Safe Drinking Water Act. Public water systems are defined under the Safe Drinking Water Act as entities that provide "water for human consumption through pipes or other constructed conveyances to at least 15 service connections or serves an average of at least 25 people for at least 60 days a year."

Idaho Department of Environmental Quality's Source Water Protection Program provides guidance and approval of source water protection areas within the State of Idaho. A source water assessment serves as a foundation for public water systems to prepare source water (drinking water) protection plans. It also defines the zone of contribution (source water protection area delineation), which is that portion of the watershed or subsurface area contributing water to the well, spring, or surface water intake. Public water supplies and source water assessments can be found on the Idaho Department of Environmental Quality website: <http://www.deq.idaho.gov/water-quality/source-water/>.

Source water is the untreated ground water (aquifers and springs) and surface waters (rivers, streams, and lakes) used to supply drinking water for private, domestic wells and public water systems. Groundwater and surface water used for drinking water supplies are often vulnerable to contamination from land use practices and potential contaminant sources within the vicinity of drinking water wells and intakes.

The State of Idaho has completed a source water assessment for each of the 36 public water systems derived from the Forest. These assessment reports include information on the potential contaminant threats to specific public drinking water sources, the likelihood that the water supply will become contaminated, and suggested management planning actions for communities and landowners. Community or use groups can develop a written plan to document drinking water protection activities at the intakes and within the appropriate source areas.

There are 14 public water systems that have surface water intakes located on Forest lands or have surface water source water protections areas that extend onto Forest lands (

Table 8). The communities of Elk River, Clearwater, Elk City, Kamiah, Orofino, Lewiston, Juliaetta, Pierce, and Riverside derive their domestic water supply directly from the surface water originating from within the Forest.

Table 8. Public water systems that have surface water intakes on Forest lands or have surface water source water protections areas that extend onto Forest lands.

Public Water System Number	Public Water System Primary Name	Subbasin	Water Source	Class of Public Water System
218001	Ahsahka Water and Sewer District	Lower North Fork Clearwater	North Fork Clearwater	Non-Community
2180007	Big Eddy Marina, Clearwater County, Idaho (2001)	Lower North Fork Clearwater	Dworshak Pool	Non-Community
2180009	Dworshak Power House, Clearwater County, Idaho (2001)	Lower North Fork Clearwater	Dworshak Pool	Non-Community
2180010	Freeman Creek Campground, Clearwater County, Idaho (2001)	Lower North Fork Clearwater	Dworshak Pool	Non-Community
2180013	City of Elk River (2005)	Lower North Fork Clearwater	Elk River Intake	Community
2180024	City of Orofino (Surface Water) (2001)	Clearwater	Clearwater River	Community
2180027	City of Pierce	Clearwater	Clearwater River	Community
2180032	Riverside Independent Water District (Surface Water) (2001)	Clearwater	Clearwater River	Community
2180035	USFWS Dworshak National Fish Hatchery, Clearwater County, Idaho (2002)	Lower North Fork Clearwater	Dworshak Pool	Non-Community
2250011	Clearwater Water District (Surface Water) (2001)	South Fork Clearwater	Wall Creek	Community
2250017	Elk City Water and Sewer Association (Surface Water) (2002)	South Fork Clearwater	Big Elk Creek	Community
2290018	City of Juliaetta (Surface Water) (2001)	Clearwater	Potlatch River	Community
2310003	City of Kamiah (Surface Water) (2002)	Clearwater	Clearwater River	Community
2350014	City of Lewiston (Surface Water) (2002)	Clearwater	Clearwater River	Community

There are 22 public water systems withdrawing groundwater from wells/springs within Nez Perce-Clearwater lands (Table 9). The communities of Grangeville, Kooskia, and Potlatch derive groundwater that drains from Nez Perce-Clearwater lands.

Table 9. Public water systems that have groundwater intakes or delineated zone of contribution located within Nez Perce-Clearwater Forest lands.

Public Water System Number	Public Water System Primary Name	Subbasin	Class of Public Water System
2180041	USFS Canyon Work Center (2001)	Upper North Fork Clearwater	Non-Community
2180046	USFS Kelly Forks Work Center (2001)	Upper North Fork Clearwater	Non-Community
2180047	USFS Musselshell Work Center (2001)	Clearwater	Non-Community
2180056	USFS Elk Creek Campground	Lower North Fork Clearwater	Non-Community
2250003	Middle Fork Cafe	Middle Fork Clearwater	Non-Community
2250023	Grangeville Water Dept.	South Fork Clearwater	Community
2250032	Kooskia Water Dept.	Middle Fork Clearwater	Community
2250035	Lochsa Lodge (2001)	Lochsa	Non-Community
2250036	Wilderness Inn	Lochsa	Non-Community
2250047	Rapid River Fish Hatchery IDFG	Little Salmon	Non-Community
2250050	Rapid River Homeowners Water Sewer Dist.	Little Salmon	Non-Community
2250051	Red River Hot Springs	South Fork Clearwater	Non-Community
2250052 2250078	USFS Powell Campground (2001)	Lochsa	Non-Community
2250056	Shearer Lumber Products	South Fork Clearwater	Non-Community
2250062	River Dance Lodge	Lochsa	Non-Community
2250063	Three Rivers Resort	Lochsa	Non-Community
2250074	USFS Lochsa Historical Visitor and Work Camp (2002)	Lochsa	Non-Community
2250075	USFS Lolo Pass Visitor Center	Lochsa	Non-Community
2250081	USFS Wendover Campground (2002)	Lochsa	Non-Community
2250082	USFS Whitehouse Campground (2002)	Lochsa	Non-Community
2250085	USFS Wilderness Gateway Campground (2002)	Lochsa	Non-Community
2250088	USFS Castle Creek Work Center and Campgrounds (2002)	South Fork Clearwater	Non-Community
2250091	USFS Fenn Ranger Station and YCC Camp (2003)	Lower Selway	Non-Community
2250098	USFS O'Hara Bar Campground (2002)	Lower Selway	Non-Community
2250101	USFS Red River Campground (2002)	South Fork Clearwater	Non-Community
2250102	USFS Red River Ranger Station (2003)	South Fork Clearwater	Non-Community
2250105	USFS Slate Creek Ranger Station (2001)	Lower Salmon	Non-Community
2250125	Three Rivers Mill	Clearwater	Non-Community
2250132	Riggins Hot Springs	Lower Salmon	Non-Community
2290003	Bennett Lumber Company	Palouse	Non-Community

Public Water System Number	Public Water System Primary Name	Subbasin	Class of Public Water System
2290006	Camp Grizzly Boy Scouts	Palouse	Non-Community
2290021	Mineral Mountain Rest Area IDT	Palouse	Non-Community
2290030	City of Potlatch	Palouse	Community
2290051	USFS Giant White Pine Campground (2002)	Palouse	Non-Community
2290052	USFS Laird Park Campground (2002)	Palouse	Non-Community

Groundwater is an important resource in Idaho, and it will likely become more important in the future as the State's population and industries grow. Ground water is the source of drinking water for 95% of Idaho citizens (IDEQ 2019). Idaho uses over 12,384 million gallons of groundwater per day for domestic use, public water supplies, irrigation, livestock, and industry (Murray 2018b). Water generated in the mountains of the Forest is an important source of recharge for downstream aquifers and is therefore an important ecosystem service to local communities. The Forest contains all or portions of the following groundwater flow systems: Palouse River, Hangman Creek, Clearwater Uplands, Clearwater Plateau, Mill Creek, Little Slate Creek, Elk City, and Red River (Graham and Campbell 1981).

Water from the Forest drains into six Idaho counties (Table 10). Total groundwater withdrawn for public and domestic water supply is 17.2 million gallons per day (Murray 2018a). An additional 12.7 million gallons of groundwater per day is utilized for irrigation, livestock, aquaculture, and other industry. In comparison these same counties use 55.6 million gallons of surface water per day for public supply, irrigation, livestock, aquaculture, and other industry (Murray 2018a). Consumption is limited to special-use permits, Forest Service campgrounds or administrative sites with domestic wells, private in-holdings, and in-forest communities.

Table 10. Groundwater Withdrawal Amounts by County.

County	Population served	Public and domestic groundwater withdrawal (Mgal/d)	Total groundwater, includes public, domestic, irrigation, livestock and industry (Mgal/d)	Percent NFS lands
Benewah	9,218	0.5	0.8	4
Clearwater	8,373	0.7	6.3	50
Idaho	15,697	2.6	3.1	56
Latah	34,714	6.8	9.3	21
Lewis	3,750	0.7	1.2	Less than 1
Nez Perce	37,931	3.1	6.0	Less than 1
Shoshone	13,157	2.8	3.1	3
Total	122,840	17.2	29.8	

Water Rights

Water rights for the Forest are administered by the Regional Office in close coordination with the State of Idaho. Water rights are enforced by the State. Both consumptive and non-consumptive water rights issues are currently being addressed through legal mechanisms. Water rights that occur on the Nez Perce-Clearwater are summarized in Table 11. Historic claims, both consumptive and non-consumptive, are being processed under the Snake River Basin Adjudication. Once processed and approved, the water rights are decreed. Consumptive claims are mostly filed under State water law, with the exception of certain reserved claims for administrative purposes. Non-consumptive claims include reserved rights for Wild and Scenic Rivers. Non-reserved instream flow claims are being processed through the State comprehensive water planning process and the Nez Perce Tribal Settlement Agreement under the Snake River Basin Adjudication. Instream flows for resource protection are also included as conditions in special use permits.

A "statutory claim" is a statement that was filed with Idaho Department of Water Resources to make a record of an existing beneficial use right. In 1978, a statute was enacted requiring persons with beneficial use rights, other than water rights used solely for domestic purposes as defined above, to record their water rights with Idaho Department of Water Resources. The purpose of the statute was to provide some means to make records of water rights for which there were previously no records. However, these records are merely affidavits of the water users, and do not result in a license, decree, or other confirmation of the water right. "Adjudication" is a court action for the determination of existing water rights, which results in a decree that confirms and defines each water right. "Licensed" water rights are permits issued by Idaho Department of Water Resources allowing the use of water.

Table 11. Number of water rights and claims by type on the Nez Perce-Clearwater.

Owner	Decreed Water Rights	Statutory Claims	Licensed Water Uses	Total
Federal Government	775	136	7	918
All Others	86	75	144	305

Surface Water Use

In the Clearwater Basin, most subwatersheds which have consumptive surface water rights contain less than 1,000 acre foot per year or 1.4 cubic feet per second of surface water allocation. The highest non-consumptive water right is greater than 400,000 acre foot per year or 500 cubic feet per second associated with minimum instream flows on the Lochsa, Selway, and Middle Fork Clearwater rivers. With the exception of areas near Lewiston, Pierce, and Kooskia where maximum allowable use ranges from 10,000 to 35,000 acre foot per year or 14 to 50 cubic feet per second, water use in other subwatersheds is generally below 5,000 acre foot per year or 7 cubic feet per second (Clearwater Subbasin Assessment 2003). Data regarding potential water use within the Clearwater Basin was derived from Idaho Department of Water Resources records on both water rights and adjudication claims filed under the Snake River Basin Adjudication process.

The Salmon River Subbasin Assessment (2004) noted 40 points of water diversion in the Middle Salmon–Chamberlain subbasin, 1,500 points of water diversion in the Little Salmon subbasin, and 450 known points of water diversion in the Lower Salmon subbasin. The numbers include the Snake River Basin Adjudication recommended rights, the claims they are or will be processing, and any other licensed and permitted rights currently recognized. Because the amount of water that can be diverted at any one time depends on available water and many other factors, no diversion rates or volumes have been given.

Groundwater Use

Groundwater use in the Clearwater basin is less substantial than surface water use in both amount and distribution. The overall distribution of allowable groundwater use is predominantly associated with privately owned portions of the basin, and is most likely comprised of municipal and domestic use. No groundwater use is permitted in the Selway River drainage or the Upper North Fork subbasins. Allowable groundwater use in the Lochsa, Lower North Fork, and South Fork subbasins is both limited and localized.

2004 Snake River Water Rights Agreement

The 2004 Snake River Water Rights Agreement resolved all of the issues related to the Nez Perce Tribe's water right claims in the SRBA. In the Salmon and Clearwater basins, the primary goal of the settlement agreement provisions is to conserve and enhance fish habitat in order to address ESA concerns. As a result of the Agreement, the Idaho Water Resource Board holds minimum stream flow water rights on streams that provide significant protection for steelhead, salmon, and bull trout. Most of the streams flow through federal public lands.

Minimum Instream Flows

Minimum stream flow water rights are held by the Idaho Water Resource Board in trust for Idaho citizens ([Idaho Code, Title 42, Chapter 15](#)) for the purpose of maintaining minimum streamflows to protect a variety of instream uses. Minimum streamflows have been established to protect fish habitat, recreation, aquatic life, and wildlife habitat.

The Idaho Water Resource Board holds minimum streamflow water rights on the entire length or portions of the following streams Middle Fork Clearwater, North Fork Clearwater River, Lochsa River, Selway River, Elk Creek, Cayuse Creek, Little North Fork Clearwater River, Weitas Creek, Kelly Creek, Red River, American River, Crooked River, Newsome Creek, Tenmile Creek, South Fork Clearwater River, Johns Creek, Mill Creek, Meadow Creek, and Salmon River (IDWR data).

Wild and Scenic Rivers Agreement and Wild and Scenic Watersheds

The Wild and Scenic Rivers Agreement resolved issues related to federal reserved water right claims filed by the federal government under the Wild and Scenic Rivers Act. The agreement provides for the quantification of the wild and scenic federal reserved water rights and state administration of those rights. Rapid River, Salmon River, Middle Fork Clearwater, Lochsa, and Selway rivers all have established minimum flow water rights.

In addition to quantifying the wild and scenic water rights, the Wild and Scenic Agreement subordinated the wild and scenic water rights to certain existing and future water uses and required detailed administration of existing and new water rights to ensure water use conforms to all elements of the water rights. The provisions of the Wild and Scenic Agreement apply to hydraulically connected water sources above (upstream from) the ending points of the respective wild and scenic water rights. Idaho Department of Water Resources interprets the term "hydraulically connected sources" to mean all sources of water, including ground water, within the surface water drainages of the wild and scenic rivers, upstream from the ending points of the wild and scenic water rights. All surface water rights and ground water rights diverted from sources hydraulically connected to the wild and scenic river reaches upstream from the ending points are recorded, tracked, and administered as anticipated under the provisions of the Wild and Scenic Agreement. The watersheds containing Nez Perce-Clearwater NFS lands are Lochsa River, Middle Fork Clearwater River, Rapid River, Salmon River (excluding Middle Fork), Selway River, and St. Joe River. They cover 2,112,767 acres or 52 percent of the Nez Perce-Clearwater.

Specially Protected Waters

All streams within the Forest are protected by the Clean Water Act. Idaho Department of Environmental Quality administers the Clean Water Act through water quality standards, designation of beneficial uses, and the anti-degradation program. There are several streams on the Nez Perce-Clearwater that have distinct status that offers additional protections, including streams in wilderness and Idaho roadless area, wild and scenic rivers, special resource waters, and state protected waters.

Outstanding Resource Waters

Outstanding resource waters are high quality waters that have been designated by the Idaho legislature. Outstanding resource waters constitutes an outstanding national or state resource that requires protection from point and nonpoint source activities that may lower water quality. In 2000, the Board of Environmental Quality passed a motion to recommend portions of the Selway Rivers as outstanding resource waters. These segments included the Selway River, Meadow Creek, Moose Creek, East Fork Moose Creek, North Fork Moose Creek, Running Creek, Bear Creek, and White Cap Creek. The Idaho State legislature has yet to designate any river as an outstanding resource waters.

Special Resource Waters

As outlined in section 056 of the Idaho Water Quality Standards (IDAPA 58.01.02), special resource waters are those specific segments or bodies of water which are recognized as needing intensive protection to preserve outstanding or unique characteristics or to maintain current beneficial uses. There are 1,380 miles of special resource waters on the Nez Perce-Clearwater. Rivers with special resource water designations are: Potlatch River, Clearwater River, North Fork Clearwater River, Middle Fork Clearwater River, Lochsa River, Selway River, South Fork Clearwater River, American River, Red River, Salmon River, Little Salmon River, and Rapid River.

Northwest Power and Conservation Council Protected Areas

In 2003, the Northwest Power and Conservation Council determined that for specific stream reaches, hydroelectric development would have unacceptable risks of irreversible loss to fish and wildlife and identified these stream reaches as “Protected Areas”. In essence, Protected Areas are places where fish and wildlife values are judged to outweigh the value of electricity those areas could generate. Under the Northwest Power Act and the Federal Power Act, federal entities; specifically the Bonneville Power Administration, Federal Energy Regulatory Commission, U.S. Army Corps of Engineers, and the Bureau of Reclamation; must consider protected area status and restrictions when making decisions regarding hydroelectric facility permits and access to electricity from those facilities. Inclusion in a protected area does not prohibit hydroelectric development at a site. However, the Council 1) calls on FERC not to license a new hydroelectric development in a protected area, and 2) calls on BPA not to acquire the power from such a project should one be licensed by FERC, nor to allow access to the Pacific Northwest-Pacific Southwest Intertie, or “power grid”, in a way that would undermine the protected areas policy. The Northwest Power and Conservation Council identified 2,385 miles of protected areas or streams on the Nez Perce-Clearwater.

Protected Area designations by the Council are not the only constraint on hydroelectric development. Federal designations such as wilderness areas, wild and scenic rivers, and other designations can constrain hydroelectric development, as can state statutes. The Northwest Power and Conservation Council identified 1,215 miles of stream already protected under other federal or state action.

Comprehensive State Water Plan

The Idaho Water Resource Board is charged with the development of the Idaho Comprehensive State Water Plan (IWRB 2012). The plan includes the statewide water policy plan and associated component basin and water body plans which cover specific geographic areas of the state.

The Idaho Water Resource Board prepared components of the Comprehensive State Water Plan for the North Fork Clearwater River Basin (IWRB 1996) and South Fork Clearwater River Basin (IWRB 2005). The purpose of the plans are to provide guidance for the development, management, and protection of water and related resources in the North Fork and South Fork Clearwater River Basins in compliance with provisions of the Idaho State Constitution and Idaho State Code.

State Protected River Designations

The Idaho Water Resource Board has determined that the value of preserving the designated waterways of the North Fork and South Fork Clearwater River basins is in the interest of and for the benefit of the state as a whole. All landowners; private, state, and federal; are encouraged to manage their lands consistent with the Idaho Water Resource Board’s protection designations. The Idaho Water Resource Board also encourages federal resource management agencies to work within the comprehensive state water planning process rather than pursuing federal protection of waters within Idaho.

To protect the public interest, current resource use, and the multiple-use character of the basins, the Idaho Water Resource Board designates specific streams and stream segments as protected with the classification of natural or recreational. As shown in Table 12, there are 534 miles of stream with state protected river designations.

Table 12. State protected river designations by category for the North Fork and South Fork Clearwater River Basins.

Category	Miles	Rivers
North Fork Clearwater natural rivers	103	Portions of North Fork Clearwater River, portions of Isabella Creek, Weitas Creek, portions of Kelly Creek, Cayuse Creek, Little North Fork Clearwater River,
North Fork Clearwater recreation rivers	97	Portions of North Fork Clearwater River, portions of Isabella Creek, portions of Kelly Creek, Beaver Creek, Elk Creek
South Fork Clearwater natural rivers	49	Tenmile Creek, Williams Creek, Twentymile Creek, Johns Creek, Hagen Creek, Square Mountain Creek, Moores Creek, Gospel Creek, West Fork Gospel Creek
South Fork Clearwater recreation rivers	284	East Fork Crooked River, West Fork Crooked River, Sixmile Creek, Wing Creek, Silver Creek, Red River, Otterson Creek, South Fork Red River, West Fork Red River, Moose Butte Creek, Red Horse Creek, American River, Limber Luke Creek, West Fork American River, East Fork American River, Kirks Fork, Crooked Fork River, Relief Creek, Newsome Creek, Haysfork Creek, Baldy Creek, Pilot Creek, Sawmill Creek, Sing Lee Creek, West Fork Newsome Creek, Meadow Creek, Mill Creek, and South Fork Clearwater River.

State of Idaho Prohibited Activities on Protected Rivers

The following activities are prohibited on all protected streams, unless specific exceptions apply:

- Construction or expansion of dams or impoundments;
- Construction of hydropower projects;
- Construction of diversion works;
- Dredge or placer mining, including recreational dredging, except where allowed through application for permit, Form 3804-B;
- Mineral or sand and gravel extraction within the stream channel;
- Alterations of the stream channel, except as outlined under activities allowed with terms and conditions.

Activities allowed with terms and conditions

The following activities are allowed if they do not impede fish passage, spawning, rearing, and boat passage: alterations of the stream channel for construction and maintenance of roads, bridges, and trails; public recreation facilities; fish and wildlife enhancement structures; and channel reconstruction projects approved by the Idaho Water Resource Board.

Recreational Designated Streams with Exceptions to Prohibited Activities

Exceptions can only occur if they do not impede fish passage, spawning, rearing or boat passage and activities must comply with all state stream channel alterations rules and standards. All works must be constructed or maintained to minimize erosion and sedimentation. The following rivers or streams are adjacent to privately owned land which may require construction of diversion works for domestic, municipal or agricultural uses: South Fork Clearwater River, from the Nez Perce National Forest

boundary to confluence with Middle Fork Clearwater; Red River and Moose Butte Creek; American River, mainstem only; Relief Creek; Crooked River, mainstem only; Newsome Creek mainstem and Pilot Creek; Meadow Creek; and Mill Creek.

Best Management Practices

Best management practices, often referred to as “BMPs” are methods, measures, or practices used to address the Clean Water Act (CWA) objective of maintaining and restoring the chemical, physical, and biological integrity of the Nation’s waters. The use of best management practices is the primary mechanism for mitigating impacts to resources from Forest management actions. Best management practices utilized on the Nez Perce-Clearwater Forest come from federal and state direction.

Federal National Best Management Practices Program

The Forest Service initiated the National Best Management Practices Program in 2012 in order to improve management of water quality consistently with the Federal Clean Water Act (CWA) and State water quality programs and to integrate water resource protection into management activities conducted across the landscape. The goal of the National Best Management Practices Program is to improve agency performance, accountability, consistency, and efficiency in protecting water quality, and is a significant component of the Agency’s water strategy. The National Best Management Practices Program enables the Agency to readily document compliance with the management of nonpoint source pollution at local, regional, and national scales and address the planning rule requirement for national BMPs (36 CFR 219.8(a)(4)). BMPs are outlined in the National Core BMP Technical Guide (USDA FS, 2012). Direction for the implementation of this program is found in Forest Service Handbook 2509.19 and additional guidance is located at <https://www.fs.fed.us/naturalresources/watershed/bmp.shtml>.

Forest Service Handbook 2509.22, R1/R4 Soil and Water Conservation Practices

The Soil and Water Conservation Practices handbook (USDA 1988) provides site specific soil and water conservation practices for use on National Forest System lands in Region 1 and Region 4 in order to comply with direction in the Clean Water Act.

State of Idaho

Subsection 350.03 of the Idaho Water Quality Standards ([IDAPA 58.01.02](#)) lists best management practices for the purpose of limiting nonpoint source pollution. Those specific to actions on Forest Service lands are: Rules Pertaining to the Idaho Forest Practices Act, Stream Channel Alteration Rules, and Dredge and Placer Mining Operations in Idaho.

Idaho Forest Practices Act (IDAPA 20.02.01)

Since 1974, the State of Idaho has encouraged sustainable forest management on Idaho forestland through compliance with minimum Best Management Practices detailed in the “Rules Pertaining to the Idaho Forest Practices Act, Title 38, Chapter 13, Idaho Code”. Best management practices are actions that focus on maintaining high quality water in forested watersheds and keeping sediment from reaching streams. They are enforced by the Idaho Department of Lands on state and private lands and by timber sale administrators on federal lands. Best management practices are regularly monitored by Idaho Department of Lands. Additionally every four years, the Idaho Department of Environmental Quality conducts an audit of randomly selected logging projects across the state as part of Idaho’s commitment to implementing the federal Clean Water Act. The audit team monitors stream temperature, sediment in the stream, shade, bank stability and the number of aquatic fish and

invertebrate species to determine if best management practices were effective. Actions on federal lands in Idaho have had a 93 to 100% best management practice compliance rate since 1988 (IDEQ Forest Practices Water Quality Audits 1988 to 2016). Audits are available at the state website at <http://www.deq.idaho.gov/water-quality/surface-water/monitoring-assessment/forest-practices-audits/>.

The Idaho Forestry Best Management Practices Field Guide: Using BMPs to Protect Water Quality (U of I Extension 2015) is a field manual developed by the University of Idaho Extension. It includes information and diagrams about the Idaho Forest Practices Act, watersheds, working forests, forest roads, stream crossings, and timber harvest methods and post-harvest activities. It is available at <https://idahoforests.org/product/idaho-forestry-best-management-practices-field-guide-using-bmps-to-protect-water-quality/>.

Stream Channel Alteration Rules (IDAPA 37.03.07)

Section 055 of the Stream Channel Alteration Rules outlines the minimum standards to be utilized during stream channel alteration activities. The standards are intended to cover the ordinary type of stream channel alteration and are included as minimum conditions for approval of stream alteration permits.

Dredge and Placer Mining Operations in Idaho (IDAPA 20.03.01)

Rules Governing Dredge and Placer Mining Operations in Idaho are intended to implement the requirements for operation and reclamation of placer and dredge mining set forth in the Idaho Code. Compliance with these rules will allow removal of minerals while preserving water quality and ensuring rehabilitation for beneficial use of the land following mining.

The Manual of Best Management Practices for the Mining Industry in Idaho (IDL 1992) was developed through a joint effort including state and federal agencies and mining associated organizations. The handbook is intended to be an informational reference guide that can be used by both industry and regulatory agencies. The best management practices outlined in the manual are recommended for use, but are not required by law.

Conservation Watershed Networks

A conservation watershed network is a designated collection of watersheds where management emphasizes habitat conservation and restoration to support native fish and other aquatic species. The goal of the network is to sustain the integrity of key aquatic habitats to maintain long-term persistence of native aquatic species. Designation of conservation watershed networks, which should include watersheds that are already in good condition or could be restored to good condition, are expected to protect native fish and help maintain healthy watersheds and river systems. Selection criteria for inclusion should help identify those watersheds that have the capability to be more resilient to ecological change and disturbance induced by climate change. For example, watersheds containing unaltered riparian vegetation will tend to protect streambank integrity and moderate the effects of high stream flows. Rivers with high connectivity and access to their floodplains will experience moderated floods when compared to channelized and disconnected stream systems. Wetlands with intact natural processes slowly release stored water during summer dry periods, whereas impaired wetlands are likely less effective retaining and releasing water over the season. For all these reasons, conservation watershed networks represent the best long-term conservation strategy for native fish and their habitats.

Selected Conservation Watershed Network watersheds are expected to provide a pattern of protection across the landscape where the habitat of migratory salmonids receives special attention and treatment. HUC12 watersheds with stream habitat meeting desired conditions, and with strong local populations, are expected to function as refugia and a source of colonizing fish for adjacent HUC12 watersheds with habitat not meeting desired conditions. Adjacent HUC12 watersheds with habitat not meeting desired conditions, with high potential for restoration and fish production, are included in the network and are expected to offer future habitat suitable for population expansion after desired conditions are met. Watersheds included in the Conservation Watershed Network are intended to replace those previously identified as Key or Priority under guidance found in NOAA (1995).

Criteria used to identify these watersheds included the following:

- 1) Designated critical habitat for one or more Endangered Species Act listed species over large portions of the stream network. Examples include the Columbia River bull trout, Snake River steelhead trout, and Snake River spring and summer Chinook salmon.
- 2) A local bull trout population identified in the final Columbia River Bull Trout Recovery Plan (USDI-FWS 2016).
- 3) A major or minor spawning area for Snake River steelhead trout or Snake River spring and summer chinook salmon or both identified in the draft Snake River Recovery Plan (NOAA 2016).
- 4) 1980/2040 Climate Shield modeled reaches for bull trout (Isaak et al, 2015)
- 5) Municipal watershed
- 6) Important spawning and rearing habitat for one or more aquatic species
- 7) Isolated allopatric westslope cutthroat trout population with high genetic integrity
- 8) Important spawning habitat for kokanee within the Lower North Fork Clearwater subbasin only

Table 13 contains the updated list of HUC12 watersheds proposed to be included as Conservation Network Watersheds, in which achievement of desired conditions for aquatic resources is expected to be emphasized, summarized by subbasin (HUC8) and watershed (HUC10).

Table 13. Proposed Conservation Network Watersheds.

HUC8	HUC10	HUC12	HUC12 Acres (Total)	HUC12 Acres (FS Only)
Lower North Fork Clearwater	NF Clearwater River – Beaver Creek	Isabella	19,769	19,769
		Little NF Clearwater - Minnesoka	22,353	18,355
	Elk Creek	Upper Elk	26,983	21,846
Upper North Fork Clearwater	Skull Creek	Upper Skull	17,947	17,947
		Collins	22,733	22,722
		Lower Skull	15,520	15,235
	NF Clearwater – Quartz Creek	Quartz Creek	27,935	27,935
	Weitas Creek	Upper Weitas	15,789	15,787
		Middle Weitas	34,822	34,822
		Lower Weitas	19,124	19,124
		Little Weitas	19,471	19,470

HUC8	HUC10	HUC12	HUC12 Acres (Total)	HUC12 Acres (FS Only)
		Middle	17,510	17,510
		Hemlock	21,431	21,428
		Johnny	11,742	11,472
	Moose Creek	Deadwood Creek – Moose Creek	14,311	14,151
		Osier	19,835	19,664
		Little Moose	12,529	12,529
	Cayuse Creek	Upper Cayuse	28,934	28,933
		Middle Cayuse	17,837	17,834
		Lower Cayuse	14,196	14,196
		Toboggan	13,791	13,791
		Monroe	13,259	13,259
		Gravey	19,907	19,819
	Kelly Creek	Kelly Forks	26,235	26,101
		Upper Kelly	30,644	30,641
		Lower Kelly	30,431	30,431
	NF Clearwater – Lake Creek	NF Clearwater – Vanderbilt	34,112	33,742
		NF Clearwater - Meadow Creek	16,210	61,210
		NF Clearwater - Long Creek	17,921	17,921
		NF Clearwater – Lake Creek	22,066	21,956
Lochsa	Lower Lochsa River	Pete King	17,630	17,591
		Old Man Creek	28,133	28,130
		Split Creek	9,994	9,994
		Fire Creek	11,273	11,225
	Middle Lochsa River	Lochsa River – Post Office Creek	12,192	12,192
		Lochsa River – Lake Creek	33,315	33,307
		Lochsa River – Stanley Creek	31,593	31,593
		Lochsa River – Boulder Creek	30,038	30,023
		Lochsa River - Bald Mountain Creek	28,825	28,818
		Lochsa River – Weir Creek	33,221	33,212
	Warm Springs Creek	Wind Lakes Creek	12,561	12,538
		Upper Warm Springs	13,788	13,785
		Lower Warm Springs	19,451	19,436
	Fish Creek	Upper Fish Creek	23,251	23,245
		Hungry Creek	22,687	22,687
		Lower Fish Creek	10,401	10,397
	Upper Lochsa River	Lochsa River – Walton Creek	18,820	15,804
		Lochsa River – Wendover	20,737	20,737
		Lochsa River Waw’aa’limnine Creek	17,209	17,194
		Lochsa River – Imnatmat’noon Creek	13,227	10,406
	Colt Killed Creek	Upper Colt Killed Creek	24,754	24,754

HUC8	HUC10	HUC12	HUC12 Acres (Total)	HUC12 Acres (FS Only)
		Middle Colt Killed Creek	10,810	10,792
		Colt Creek	16,658	16,658
		Lower Colt Killed Creek	21,071	18,695
		Storm Creek	32,704	32,591
		Hidden Creek	10,519	10,514
		Upper Big Sand Creek	17,368	17,111
		Lower Big Sand Creek	24,497	24,497
	Crooked Fork Creek	Upper Crooked Fork Creek	19,449	18,888
		Boulder Creek	16,033	15,645
		Lower Crooked Fork Creek	21,113	11,811
Lower Clearwater	Upper Potlatch River	WF Upper Potlatch River	39,815	24,224
		EF Potlatch River ³	39,715	4,778
	Middle Potlatch River	Corral Creek	14,351	7,425
		Potlatch River – Hog Meadows	22,168	10,189
	Lolo Creek	Upper Lolo Creek	26,831	26,831
		Middle Lolo Creek	29,520	10,026
		Musselshell Creek	35,354	14,717
		Eldorado Creek	27,214	27,213
	Clear Creek	Upper Clear Creek	19,139	18,557
		South Fork Clear Creek	24,152	24,152
		Lower Clear Creek	29,412	7,778
Lower Selway River	Lower Selway River – Gedney Creek	O'Hara Creek	37,899	37,899
		Gedney Creek	30,836	30,835
		Selway River – Goddard Creek	22,725	21,525
	Meadow Creek	Lower Meadow Creek	31,605	31,605
		Buck Lake Creek	20,750	20,750
		Sable Creek	13,694	13,694
		Middle Meadow Creek	33,240	33,240
		Upper Meadow Creek	22,359	22,359
		Headwaters Meadow Creek	24,082	24,082
	Selway River – Three Links Creek	All HUC12's	229,990	229,990
	Moose Creek	All HUC12's	217,053	217,053
Upper Selway River	Bear Creek	All HUC12's	145,268	145,268
	Upper Selway River – Pettibone Creek	All HUC12's	96,639	96,568
	Running Creek	Upper Running Cr	24,371	24,369
		Lower Running Cr	17,716	17,701
South Fork Clearwater River	Middle South Fork Clearwater River	South Fork Clearwater River – Lightning Creek	29,740	11,937
		Meadow Creek	24,024	23,774
		Mill Creek	23,459	22,810
	Johns Creek	Lower Johns Creek	26,149	25,390

HUC8	HUC10	HUC12	HUC12 Acres (Total)	HUC12 Acres (FS Only)
		Upper Johns Creek	30,800	30,800
		Gospel Creek	15,209	15,150
	Upper South Fork Clearwater River	Tenmile	34,353	34,299
	Crooked River	Upper Crooked River	28,643	28,412
		Lower Crooked River	16,980	15,878
	Newsome Creek	Upper Newsome Creek	24,522	24,324
		Lower Newsome Creek	18,048	17,989
	American River	Upper American River	15,266	14,259
		East Fork American River	11,401	10,590
		Lower American River	15,263	8,979
		Elk Creek	16,317	6,971
	Red River	Upper Red River	32,019	31,383
		South Fork Red River	24,152	24,152
		Middle Red River	23,132	21,321
		Lower Red River	23,935	22,557
Middle Salmon - Chamberlain	Sabe Creek	Upper Sabe Creek	19,865	19,865
		Lower Sabe Creek	15,313	15,313
	Bargamin Creek	Upper Bargamin Creek	23,097	23,097
		Middle Bargamin Creek	22,617	22,616
		Lower Bargamin Creek	24,230	24,230
	Middle Salmon – Sheep Creek	Sheep Creek	35,041	34,464
	Crooked Creek	Upper Crooked Creek	17,441	17,176
		Lake Creek	28,902	27,848
		Big Creek	18,012	18,012
		Lower Crooked Creek	20,072	19,975
	Wind River	Wind River	23,698	23,587
		Meadow Creek	17,807	17,606
Lower Little Salmon River	Rapid River	Rapid River – Copper Creek		
		West Fork Rapid River	22,053	21,972
		Lower Rapid River	16,511	12,188
Lower Salmon River	Lower Salmon River – Race Creek	Race Creek	18,418	12,270
		John Day Creek	14,028	6,659
	Slate Creek	Upper Slate Creek	10,659	10,659
		Upper Little Slate Creek	25,528	25,468
		Lower Little Slate Creek	15,876	15,876
		Lower Slate Creek	32,049	26,161
	Lower Salmon River – Skookumchuck	Skookumchuck Creek	20,947	14,372
	White Bird Creek	North Fork White Bird Creek	21,084	14,055
		South Fork White Bird Creek	22,979	21,480

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